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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/943,399	10/03/97	VAUGHN	S 97B058

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IM22/1208

EXAMINER

GRIFFIN, W

ART UNIT	PAPER NUMBER
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1764  
DATE MAILED:

24  
12/08/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
08/943,399

Applicant(s)  
Vaughn

Examiner  
Walter D. Griffin

Group Art Unit  
1764



☒ Responsive to communication(s) filed on Sep 27, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 41-52, 55, 56, and 58-61 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 41-52, 55, 56, and 58-61 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 22

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## **DETAILED ACTION**

### ***Response to Amendment***

Except for the rejections under 35 U.S.C. § 112 detailed below, the rejections described in paper no. 20 have been withdrawn in view of the amendment of September 27, 2000. Accordingly, the arguments concerning these rejections are considered to be moot and will not be addressed.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 43 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 43 and 47 are indefinite because the expression "said second molecular sieve" in claim 43 lacks proper antecedent basis in claim 41.

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It is noted that applicant attempted to amend claim 41 in the amendment of September 27, 2000 to overcome the rejection described above. However, the amendment to that claim has not been entered since the amendment attempts to add more than five words to the claim. See MPEP 714.22. If applicant rewrites claim 41 incorporating the amendment of September 27, 2000, then this rejection will be overcome.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 41, 42, 45, 46, 49-52, 55, 56, 58, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2171718 in view of Kaiser (4,677,243) and Kaiser (4,527,001).

The GB 2171718 reference discloses a method for converting oxygenates to olefins by contacting an oxygenate feed with a catalyst at conversion conditions in a reactor. The olefin-containing product from the reactor is fractionated, the light olefins are recovered, and the heavy fraction containing C<sub>4</sub> olefins is recycled to the reaction zone. The recycling results in an increased yield of light olefins. (See page 1, line 56 through page 2, line 29.)

The GB 2171718 reference does not disclose the use of a non-zeolitic molecular sieve in the reaction zone and does not disclose a separate second reaction zone.

The Kaiser ('243) reference discloses a process for converting oxygenates by contacting the feed with a SAPO such as SAPO-34. (See col. 5, lines 32-56.)

The Kaiser ('001) reference discloses a process for converting olefins such as butenes to lighter olefins such as ethylene and propylene by contacting the feed with a SAPO such as

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SAPO-34. (See col. 1, line 66 through col. 5, line 48 and the examples.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of GB 2171718 by utilizing a SAPO catalyst as disclosed by both Kaiser references because the SAPOs are extremely efficient catalysts for the conversion of oxygenate feeds to light olefins, are effective catalysts for the conversion of heavier olefins such as butenes to lighter olefins such as ethylene and propylene, and additionally have increased life over zeolites. Therefore, substituting the SAPO's of the Kaiser reference for the catalyst of the GB reference would result in the expectation that both oxygenates and heavier olefins would be converted to lighter olefins.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the GB 2171718 by having a separate second reaction zone and passing the heavy fraction to this zone instead of recycling because the same result would be expected as long as the heavy fraction contacts the catalyst at conversion conditions.

Claims 43, 44, 47, 48, 60, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2171718 in view of

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Kaiser (4,677,243) and Kaiser (4,527,001) as applied to claims 41 and 42 above, and further in view of DE 3524890.

The previously-discussed references do not disclose the use of a zeolite such as ZSM-5 in a second reactor.

The DE 3524890 reference discloses a process for converting oxygenates to olefins in which a heavy fraction recovered from the olefin product is further contacted with a zeolite (i.e., ZSM-5 type) catalyst. (See the entire document, especially the English language abstract.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the previously-discussed references by further contacting the heavy fraction recovered from the olefin product with a ZSM-5 type zeolite catalyst as suggested by the DE 3524890 reference because additional olefins will be produced.

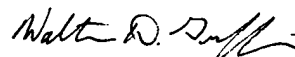
### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter Griffin whose telephone number is (703) 305-3774. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Marian Knode can be reached at (703) 308-4311. The fax phone number for this Group is (703) 305-3599.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



WALTER D. GRIFFIN  
PRIMARY EXAMINER  
ART UNIT 1764

WG

December 1, 2000